APPENDIX

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United States Court of Appeals
for the Federal Circuit
99-1012,-1013

ADVANCED DISPLAY SYSTEMS, INC.,
Plaintiff-Appellee,
and
BAO GANG WU,
Third Party Defendant-Appellee,
v.
KENT STATE UNIVERSITY and KENT RESEARCH CORPORATION,
Defendants/Third Party
Plaintiffs-Appellants,
and
KENT DISPLAY SYSTEMS, INC.,
Defendant/Third Party
Plaintiff-Appellant.

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Appealed from: United States District Court for the Northern District of Texas

Judge Jeffrey A. Kaplan

United States Court of Appeals
for the Federal Circuit

99-1012, -1013

ADVANCED DISPLAY SYSTEMS, INC.,
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KENT STATE UNIVERSITY and KENT RESEARCH CORPORATION,

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Plaintiffs-Appellants,

and

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Defendant/Third-Party
Plaintiff-Appellant,

DECIDED: May 18, 2000

Before PLAGER, SCHALL, and GAJARSA, Circuit Judges.

GAJARSA, Circuit Judge.

DECISION

This is an appeal from the judgment of the United States District Court for the Northern District of Texas, entered on a jury verdict, in a consolidated declaratory judgment and patent infringement action relating to U.S. Patent No. 5,453,863 (the "West patent"). Advanced Display Systems, Inc. ("ADS") filed a complaint in the Northern District of Texas seeking a declaratory judgment of invalidity of the West patent. Kent State University ("KSU"), an assignee of the West patent, and licensees Kent Research Corporation ("KRC") and Kent Display Systems, Inc. ("KDS") (collectively "Kent") then filed an infringement action, and the two cases were consolidated with Kent as the nominal defendant and ADS as the nominal plaintiff. The parties agreed to have a magistrate judge preside over the jury trial. Following the two-week trial, the jury found that the West patent was invalid for anticipation and obviousness and not infringed by ADS. Kent then moved for a new trial on all the issues in light of newly discovered evidence. Kent also moved for a new trial on anticipation, alleging an erroneous jury instruction. In addition, Kent filed a motion for sanctions against ADS's counsel for withholding evidence during discovery. The magistrate judge denied all of these motions. On appeal, we hold that prejudicial legal error tainted the jury instruction, we vacate the judgment, and remand for a new trial on anticipation. We also remand for a new trial on obviousness and infringement in light of the newly discovered evidence. Finally, we reverse the magistrate judge's ruling on the motion for sanctions.

BACKGROUND

Since 1965, scientists at KSU's Liquid Crystal Institute ("LCI") have been researching the various properties and applications of liquid crystal materials. An important area of

research focused on liquid crystal displays ("LCDs"). A typical LCD consists of a sandwich of liquid crystal material between two glass substrates. An electrical driver[1] connects to the sandwich in order to stimulate or address the liquid crystal material, thereby creating readable numerical or alphabetical characters. Manufacturers of electro-optic products, such as digital watches and notebook computers screens, use LCDs to display images and information.

Traditionally, LCDs were constructed by combining varying concentrations of liquid crystal materials and polymers. For example, one method for creating LCDs involved evaporating water from an aqueous emulsion of liquid crystal material in a solution of water-soluble polymer. Another method involved phase separation of liquid crystal from a homogenous solution with a synthetic resin to generate a liquid crystal phase blended with a polymer phase. Those methods, however, were expensive and entailed complex manufacturing processes. In addition, the presence of polymers created a haze effect that obstructed visibility of the displayed information when the LCDs were viewed from oblique angles.

In early 1992, Dr. John West ("West"), director of LCI, began experimenting with techniques for developing polymer-free LCDs. West eventually developed a new, polymer-free LCD using cholesteric visible materials.[2] West determined that applying an electric determined that applying an electric field pulse of sufficient duration and voltage to cholesteric visible

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1 An electrical driver is a device in which a power supply connects to electrodes, active matrices, and multiplexing circuits.

[2] Cholesteric visible material, also referred to as chiral nematic material, has a positive dielectric anisotropy and a pitch length effective to reflect light in the visible spectrum. Positive dielectric anisotropy refers to the material's ability to align parallel to an applied electric field.

material creates a contrast between the material's light reflecting and light scattering textures, thereby enabling a stable image display. West further found that a stable image could be sustained through a single electric field pulse rather than continuous application of an electric field. Thus, through the unique use of cholesteric visible materials, West achieved the advantages of prior LCDs without the drawbacks attendant to the use of polymers.

On May 4, 1993, West and his colleague, Dr. Deng-Ke Yang, filed a patent application covering their polymer-free device and a method for stimulating it. On September 26, 1995, the application matured into the West patent. West then assigned the patent to KSU, which through its licensing arm KRC, subsequently licensed the patent to KDS.

In February 1992, Dr. Bao Gang Wu ("Wu"), a former KSU student and colleague of West, formed ADS. In June 1993, Jiamini Gao ("Gao"), ADS's vice-president of research and development, secured a written formula for Kent's cholesteric LCD. Even with knowledge of that formula, however, ADS failed to develop a functional LCD device because it could not construct an effective electrical driver.

In early 1994, Dr. Zvi Yaniv ("Yaniv"), then president of KDS and a former classmate of Wu, visited ADS and demonstrated a prototype of Kent's cholesteric LCD and its electrical driver. Following the demonstration, Yaniv went to lunch with Wu, leaving the prototype at ADS's offices. Seizing the opportunity, Gao clandestinely removed the prototype from its box and brought it into an ADS laboratory. Gao then instructed a group of ADS engineers, including Victor Zhou ("Zhou"), to disassemble the prototype, photograph its various components, and re-assemble it in such a manner as to avoid any indication of tampering. Throughout this process, Gao urged

his employees to work quickly to avoid detection because he knew the implication of the theft.

Prior to Yaniv's visit, ADS failed to develop an operational, polymer-free LCD through its independent efforts. Equipped with the photographs of Kent's prototype, however, ADS replicated Kent's cholesteric LCD and electrical driver within a month. On April 11, 1994, ADS also filed a patent application for a polymer-free LCD based on the equivalent subject matter that had been photographed and copied during the surreptitious disassembly of Kent's prototype. The patent listed Wu, Gao, Zhou, and Yao-Dong Ma as inventors. While ADS's application was pending, the West patent issued, and the Patent and Trademark Office Examiner rejected ADS's claims directed exclusively to polymer-free LCDs as anticipated by the West patent. ADS consequently amended and limited its claims to cover the application of surface treatment in polymer-free LCDs. The ADS application eventually matured into U.S. Patent No. 5,625,477 on April 29, 1997.

In early 1996, Kent learned that ADS was promoting a polymer-free LCD and notified ADS that it intended to enforce the West patent. While Kent and ADS were discussing licensing arrangements, ADS filed a complaint in the Northern District of Texas seeking a declaratory judgment of invalidity of the West patent. After settlement negotiations failed, Kent sued ADS for infringement of the West patent, and the cases were consolidated in the Northern District of Texas.

Concurrent with discovery in the present case, ADS filed suit in Texas state court against USA Display, a company with several former ADS employees, alleging trade secret misappropriation. ADS's attorneys in the USA Display suit and in the present case were from the same law firm. During discovery in the USA Display suit, Zhou's deposition was taken.

The pertinent parts of the deposition are set forth below.

Q: Can you describe for me or explain to me what Exhibit 3 is?

A: This is a picture taken by an employee in ADS. I cannot remember who took it, but I know Dr. Zvi Yaniv [and Kent] also develop a similar display, they call [theirs] bistable display, but in ADS they call multistable display. But ADS did not know how to design the driver for this device. So one day Dr. Zvi Yaniv visited ADS with a sample, and [Kent] have [a] completed driver .... And Dr. Zvi Yaniv gave to Jianmi Gao, who is the vice president of ADS and boss of R & D group, so he opened Dr. Zvi Yaniv['s] ... sample, and took this picture, while at that time Dr. Zvi Yaniv was not there. So [Yaniv] did not know.

....

Q: What is this picture of?

A: This picture is the picture for the sample brought by Zvi Yaniv.

....

Q: And [Yaniv] gave [the sample to ADS]?

A: [H]e not gave a sample, he just waited at ADS with a sample and -

Q: [T]hen he left?

A: No, he did not [leave], he showed the sample. But during [t]his time period he left and [Gao] opened the box and took the picture.

....

Q: You were there?

A: Yeah, I was there.

Q: Did you open up the driver?

A: Yes. I was an employee there. I did whatever my boss told me to do.

. . . .

Q: Where was Mr. Zvi Yaniv [at that time]?]

A: Well, we are taking picture and I don't know who he was talking to, but he was somewhere within the building or maybe left for lunch. . . . I just know that [Gao] want us to take the picture, and we took it.

. . . .

Q: Prior to the meeting in which the Kent State product was taken apart and photographed at ADS . . . was ADS working on a similar type of display?

A: Yeah. They were trying to develop the similar thing.

Q: You said . . . that ADS was trying to but had not succeeded in making a driver for [their LCD]; is that correct?

A: Yes that's correct.

. . . .

Q: Would you please describe the difficulties?

A: Yeah, we did not know how to drive the new display since the driving is another difficult part for design[ing] the whole display. We did not know how to drive it, what kind of waveform . . . . We did not know that.

Q: [Was] exhibit 3 [helpful]?

A: Right. Exhibit 3. This is very big help. So since then we knew, we start to know how to design the driver.

. . . .

Q: [B]efore the photograph was made. How was

[Gao] involved in trying to make the driver?
A: We tried [for] a long time - we tried to understand how to drive it, but were not successful.
Q: Did [Gao know?]
A: He had some idea but all not successful.
Q: None of his ideas were?
A: No. We didn't even-
. . . .
Q: [During] the time period before the Kent State product was taken apart and photographed in the ADS lab. . . . [Was] ADS . . . trying to make a driver?
A: Right.
Q: And failed. Could not do it.
A: No. They did not have an idea at that time.]
. . . .
Q: Why did ADS need a driver for [its LCD]?
A: Without the driving circuit, no one [is] interested in that [LCD]. That is just a piece of glass. You have to make the life.
. . . .
Q: Do you know when . . . Mr. Gao brought you the formula for the Kent State cholesteric material?
. . . .
A: Before June.
Q: Before June of what?
A: June '93.
Q: Before Mr. Gao gave you the formulation, had ADS succeeded in making any [LCD] cholesteric materials?
A: I did not see it.

Q: After he gave you what he told you to be the Kent State formula, were you successful in making cholesteric [LCD] material?

A: Yeah.

Q: You were?

A: After he gave me [the Kent State formulation].

Q: How long did it take you after he gave you the formulation?

A: Few days.

. . . .

Q: All right. Now after you used the Kent State formulation to make the [LCD], your next problem was the driver?

A: Yeah.

Q: And on the day that Zvi Yaniv visited ADS and brought the [Kent prototype] module to show everybody, that the photographs were made, did Zvi Yaniv know the module was being photographed?

A: [Gao] . . . told us to be quick. Don't let Dr. Zvi Yaniv know . . . .

. . . .

Q: So after the photographs were made, what happened to the [Kent prototype]? Was it reassembled?

A: Reassembled and the[n] gave [it back to Yaniv].

Q: How long did it take to photograph it?

A: Pretty quick.

Q: [Gao] told you to be quick, didn't he?

A: Yeah, pretty quick.

. . . .

Q: After the Kent State [prototype] was copied, were you successful in making a driver?
A: Yes. After about a month or so.
Q: How did your driver compare to the Kent State driver?
A: We changed the microprocessor but we used the driver. The driver is the key part, the most important to this.
. . . .
Q: The cholesteric material that was developed at ADS was based upon the formulas from Kent State?
A: Yes.
Q: And the driver on the [LCD] at ADS was based upon the driver from Kent State?
A: Yeah, at that time, yes.
. . . .
Q: You didn't know whether Kent State or ADS owned the technology, did you?
A: I know—technically I know the basic[s] are the same.
Q: The basic[s] of the Kent State—
A: The chemistry mixture and the way they make the cell are the same.
Q: As Kent State and ADS?
A: Right. . . .]
. . . .
Q: Why didn't [ADS] just buy the functioning [driver] . . . ?
A: [I]t is not market available, I think. We cannot buy it.
. . . .

Q: Is it true that there are hundreds of shelf drivers?

A: Thousands and thousands.

Q: And so theoretically you could begin today to test and test drivers for years and not, other than by accident, hit the right driver?

A: By luck you may get it in a second. If not luck, it takes 10 years, it takes your life.

Q: So in order to find one that [properly charged the LCD], you either do random experimentation to find a shelf driver or invent or create a new driver?'

A: Yeah.

Q: Or use somebody else's driver?

A: Right.

. . . .

Q: [N]one of [the drivers] was built before ADS got this photograph?

A: Right.

Q: So the entire system that makes this was still to be done?

A: Right.

Q: And was anybody working on designing this system?

A: [W]e did not know how to design . . . . We don't know.

. . . .

Q: [Dr. Wu] told you to change things around so that he could get out—away from an earlier patent?

A: He tried to find us a new way to build another kind of [polymer-free LCD] so we can avoid a

conflict with Kent State, yes.

. . . .

Q: Why didn't you find a new way?

A: It is very hard. . . . We did not have the time, we did not have the money to test everything.

During this testimony, ADS's attorney attempted to terminate the deposition and telephoned the presiding judge to request a protective order. The judge denied ADS's request but suggested that both parties keep the deposition confidential until ADS filed a formal motion for a protective order. ADS, however, never filed the motion and eventually abandoned the suit. ADS's attorney also instructed the court reporter not to prepare a transcript of the deposition.

During discovery in the present case, ADS failed to disclose to Kent the events that took place during Yaniv's lunch with Wu in spite of various demands made upon ADS. In particular, Kent served upon ADS a document request for "[a]ll documents that refer or relate to any evaluation, analysis, examination, testing, performance, or investigation of any light-modulating reflective device comprising [cholesteric material] or any compound thereof made by KDS, the [LCI], or any third party." ADS's attorneys, however, failed to notify Kent about Zhou's identity or the deposition in the USA Display suit. ADS's attorneys also failed to produce the photograph of Kent's prototype, instead characterizing it as "Attorney Work Product" in the privilege log.[3]

At the end of discovery, all pre-trial issues regarding claim construction, validity, and infringement were submitted to a Special Master, who construed the claims and recommended

[3] At oral argument, ADS's counsel claimed that the photograph in its possession was attorney work product because it was a copy made by an attorney of the original photograph.

a denial of ADS's motion for summary judgment on the issue of anticipation. The magistrate judge then adopted the Special Master's report, and this case proceeded to a jury trial.

At trial, both parties presented evidence and expert testimony concerning anticipation, obviousness, and infringement. On the issue of anticipation, in particular, ADS argued that the West patent was anticipated by U.S. Patent No. 4,097,127 (the "Haas patent") and the documents incorporated by reference therein. The documents incorporated into the Haas patent disclosed hundreds of different liquid crystal materials that could reflect visible and infrared light. From that body of materials, ADS contended, with perfect hindsight, that the combination of the Haas patent and three particular liquid crystal materials taught every element of the West patent.

Into the first week of trial, Kent was advised by Mr. Kan Xu, a former ADS employee and president of USA Display, that Zhou possessed information relevant to the case. Then, more than one week into trial and without an opportunity to probe Zhou's knowledge, Kent called Zhou to testify about how ADS disassembled Kent's prototype and photographed it. The photograph was also finally provided to Kent and admitted into evidence. At this stage, however, Kent still did not possess a copy of Zhou's deposition transcript from the USA Display suit.

At the close of evidence, Kent's attorney did not make a motion for Judgment as a Matter of Law ("JMOL") on either the validity or infringement issues. On the issue of anticipation, the magistrate judge instructed the jury that their role was to determine whether and to what extent material from other documents was incorporated by reference into the Haas patent. Kent's attorney objected to this instruction, but the magistrate judge overruled the objection and included the instruction in his final charge to the jury. The magistrate judge also provided the

following definition of incorporation by reference:

> [T]he purpose of incorporation by reference is to make one document become part of another document by referring to the form in the latter in such a manner that it is apparent that the cited document is part of the referencing document as if it were fully set out therein.

After initial deliberations, the jury was unable to resolve the issues of anticipation and obviousness. The magistrate judge, however, instructed the jurors to continue deliberating until they reached a verdict. Two hours later, the jury determined that the West patent was invalid for anticipation and obviousness and not infringed.

Following the jury verdict, Kent's attorney again failed to make a motion for JMOL. Rather, having finally received Zhou's deposition transcript, Kent filed a motion for a new trial based on (1) newly discovered evidence in view of the deposition, and (2) ADS's withholding of relevant evidence during discovery. KDS also filed a motion seeking the imposition of sanctions against ADS and its attorneys for improper conduct during discovery. Regarding Kent's motion for a new trial, the magistrate judge found that Zhou's deposition was merely cumulative of his testimony at trial. The magistrate judge also determined that Kent was not prejudiced by the late disclosure of the photograph and the evidence relating to ADS's disassembly of Kent's prototype, because Kent was able to present that evidence to the jury. As for sanctions, the magistrate judge denied KDS's motion but remarked that he was "deeply concerned" with the conduct of ADS's attorneys and indicated that he would consider further disciplinary action.

ANTICIPATION

Anticipation is a question of fact, see In re Graves, 69

F.3d 1147, 1151, 36 USPQ2d 1697, 1700 (Fed. Cir. 1995), that this court reviews for substantial evidence on appeal from a jury trial, see Baxter Int'l, Inc. v. McGaw, Inc., 149 F.3d 1321, 1332, 47 USPQ2d 1225, 1233 (Fed. Cir. 1998). However, a party's failure to make a motion for JMOL, see Fed. R. Civ. P. 50(b), at any phase of the litigation precludes an appellate court from reviewing the sufficiency of the evidence underlying the jury verdict. See Biodex Corp. v. Loredan Biomedical Inc., 946 F.2d 850, 862, 20 USPQ2d 1252, 1261 (Fed. Cir. 1991) (holding that failure to make a post-verdict JMOL forecloses appellate review of the jury's factfinding); Jurgens v. McKasy, 927 F.2d 1552, 1557, 18 USPQ2d 1031, 1035 (Fed. Cir. 1991) (requiring a party to make a motion for directed verdict in order to challenge the sufficiency of the evidence on appeal); see also 9A Charles Alan Wright & Arthur R. Miller, Federal Practice & Procedure § 2536 (2d ed. 1994) (explaining that the rationale for the rule is that a party's failure to make a motion for JMOL works as a concession that sufficient evidence exists for a jury to reach a verdict). In the present case, because Kent did not make a motion for JMOL at the close of evidence or following the jury verdict, we will not disturb the jury's factual determinations.

Notwithstanding the absence of a motion for JMOL, a party may still challenge a jury verdict by establishing that the judge committed legal error or abused his discretion. See Biodex, 946 F.2d at 854, 20 USPQ2d at 1255 (stating that jury verdict may be altered if the instructions "were incorrect or incomplete as given"); Jurgens, 927 F.2d at 1557-58, 18 USPQ2d at 1036 (providing that, despite the absence of a JMOL motion, party could challenge judgment based on jury instructions). On appeal, Kent contends that the magistrate judge committed legal error by instructing the jury to determine

what material was incorporated by reference into the Haas patent for purposes of anticipation.[4] A party seeking to alter a judgment based on erroneous jury instructions must establish that (1) it made a proper and timely objection to the jury instructions, (2) those instructions were legally erroneous, see Biodex, 946 F.2d at 853-54, 20 USPQ2d at 1254-55, (3) the errors had prejudicial effect, see Jamesbury Corp. v. Litton Indus. Prod., Inc., 756 F.2d 1556, 1558, 225 USPQ 253, 255 (Fed. Cir. 1985), and (4) it requested alternative instructions that would have remedied the error. See Delta-X Corp. v. Baker Hughes Prod. Tools, Inc., 984 F.2d 410, 415, 25 USPQ2d 1447, 1450-51 (Fed. Cir. 1993).

Pursuant to Rule 51 of the Federal Rules of Civil Procedure, a party must object to jury instructions "before the jury retires to consider its verdict, stating distinctly the matter objected to and the grounds for objection." Fed. R. Civ. P. 51. Because objection to a jury instruction involves a procedural matter that is not intimately related to this court's exclusive jurisdiction, we look to the regional circuit law to ascertain the requirements necessary to comply with the rule. See Lummus Indus., Inc. v. D.M. & E., Corp., 862 F.2d 267, 270, 8 USPQ2d 1983, 1985 (Fed. Cir. 1988) (applying Fourth Circuit law to determine whether a party timely objected to a jury instruction). According to Fifth Circuit law, a party satisfies Rule 51 by objecting to an instruction prior to the jury's deliberation and stating the reason for its objection. See A.B. Baumstimler v. Rankin, 677 F.2d 1061, 1069, 215 USPQ 575, 581-82 (5th Cir.

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[4] Kent also filed a motion for a new trial on anticipation in light of the newly discovered evidence. Anticipation presents a question of what a prior art publication teaches, and because the Haas patent was available to Kent during trial, we do not understand Kent's motion for a new trial based on newly discovered evidence to pertain to the anticipation issue.

1982). Here, Kent objected before the magistrate judge charged the jury and explained that the instruction was erroneous because the jury should not decide what material was incorporated by reference. Kent's objection therefore complied with Fifth Circuit law.

Whether a jury instruction is legally erroneous is a question of law. See Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1570, 24 USPQ2d 1401, 1411 (Fed. Cir. 1992). When reviewing an instruction for legal error, this court reads the instructions as a whole and considers them in light of the entire charge to the jury. See United States Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1564, 41 USPQ2d 1225, 1232 (Fed. Cir. 1997) ("Jury instructions are reviewed for correctness, with due attention to their clarity, objectivity, and adequacy, taken as a whole."); Biodex, 946 F.2d at 854, 20 USPQ2d at 1255 (noting that this court reviews jury instructions in their entirety). Here, the relevant inquiry is whether the magistrate judge committed legal error in his jury instruction on anticipation.

Section 102(b) provides that "a person shall be entitled to a patent unless the invention was patented or described in a printed publication . . . more than one year prior to the date of the application." 35 U.S.C. § 102(b) (1994). Accordingly, invalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation. See Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999); In re Paulsen, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994). Material not explicitly contained in the single, prior art document may still be considered for purposes of

anticipation if that material is incorporated by reference into the document. See Ultradent Prods., Inc. v. Life-Like Cosmetics, Inc., 127 F.3d 1065, 1069, 44 USPQ2d 1336, 1339-40 (Fed. Cir. 1997) (holding that material incorporated by reference into a document may be considered in an anticipation determination). Incorporation by reference provides a method for integrating material from various documents into a host document—a patent or printed publication in an anticipation determination—by citing such material in a manner that makes clear that the material is effectively part of the host document as if it were explicitly contained therein. See General Elec. Co. v. Brenner, 407 F.2d 1258, 1261-62, 159 USPQ 335, 337 (D.C. Cir. 1968); In re Lund, 376 F.2d 982, 989, 153 USPQ 625, 631 (CCPA 1967). To incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents. See In re Seversky, 474 F.2d 671, 674, 177 USPQ 144, 146 (CCPA 1973) (providing that incorporation by reference requires a statement "clearly identifying the subject matter which is incorporated and where it is to be found"); In re Saunders, 444 F.2d 599, 602-03, 170 USPQ 213, 216-17 (CCPA 1971) (reasoning that a rejection for anticipation is appropriate only if one reference "expressly incorporates a particular part" of another reference); National Latex Prods. Co. v. Sun Rubber Co., 274 F.2d 224, 230, 123 USPQ 279, 283 (6th Cir. 1959) (requiring a specific reference to material in an earlier application in order have that material considered part of a later application); cf. Lund, 376 F.2d at 989, 153 USPQ at 631 (holding that a one sentence reference to an abandoned application is not sufficient to incorporate material from the abandoned application into a new application). Whether and to what extent material has been incorporated by reference into a host document is a question of law. See Quaker City Gear Works, Inc. v. Skil Corp., 747 F.2d 1446, 1453-54, 223 USPQ 1161, 1166 (Fed. Cir. 1984) (reasoning that whether a document is incorporated by reference into a patent presents

a question of law when determining enablement). As the court observed in General Electric, the doctrine of incorporation by reference has its roots in the law of wills and contracts. 407 F.2d at 1260, 159 USPQ at 337. In those areas of jurisprudence, whether material is incorporated by reference presents a question of law. See 11 Richard A. Lord, Williston on Contracts § 30:25 (4th ed. 1999) (observing that terms of a contract may be expressed in separate documents and the determination of which terms are incorporated into the contract is a question of law); George Taylor Bogert, The Law of Trusts and Trustees, § 105 (2d ed. rev. 1984) (describing the use of incorporation by reference to supply additional terms to a will and providing cases holding that whether terms are incorporated into a will is a question of law); see also Topro Servs., Inc. v. McCarthy W. Constr., Inc., 827 F. Supp. 666, 667 (D. Colo. 1993) ("Whether the Prime Contract, or any part of it, was incorporated by reference into the Subcontract is a question of law."); Siler v. Dorsett, 108 N.C. 300, 302, 12 S.E. 986, 987 (N.C. 1891) (holding that court decides whether a will incorporated material from other documents). Logic therefore requires that incorporation by reference in the field of patent law is also a question of law. Further, the standard of one reasonably skilled in the art should be used to determine whether the host document describes the material to be incorporated by reference with sufficient particularity.

Moreover, no necessary contradiction exists given that incorporation by reference is a question of law while anticipation is a question of fact. Anticipation, put simply, requires that every element of the claimed invention was previously "described in a single reference." Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1576 (Fed. Cir. 1991) (emphasis added). Thus, if incorporation by reference comes into play in an anticipation determination, the court's role is to determine what material in addition to the host document constitutes the single reference. The factfinder's role, in turn, is to determine whether that single reference describes the claimed

invention.

Turning now to the present case, ADS argued at trial that the West patent was anticipated by the Haas patent and the material incorporated therein from other documents. The magistrate judge charged the jury with the task of determining what material was incorporated by reference. As explained above, it was the duty of the magistrate judge to determine, as a matter of law, whether and what material was incorporated by reference into the Haas patent. Thus, we conclude that instructing the jury to make that determination constituted legal error.

We next consider whether that error was prejudicial. Prejudicial legal error exists when it "appears to the court [that the error is] inconsistent with substantial justice." Fed. R. Civ. P. 61. In the present case, determining what material was incorporated by reference into the Haas patent was a critical question of law for the magistrate judge to resolve before submitting the factual issue of anticipation to the jury. Indeed, during trial, ADS never contended that the material explicitly set forth in the Haas patent alone would anticipate the West patent. Rather, ADS's anticipation argument hinged on the combination of the Haas patent and the material potentially incorporated therein. The magistrate judge, however, failed to address the legal question; instead, he left that determination for the jury. This misallocation of responsibility goes to the core of an anticipation determination when, if incorporation by reference is at issue, the court must determine what material constitutes the single, prior art document. Consequently, because the instruction vitiated Kent's right to have a pivotal legal question resolved by the court, we hold that the legal error was prejudicial.

We further hold that Kent's objection would have cured the defect. In the present case, the proper jury instruction on incorporation by reference would have been no instruction at all. Thus, Kent's request that the question of incorporation by reference not be submitted to the jury would have ameliorated

the error.

Accordingly, given that Kent preserved its right to appeal the jury instruction and prejudicial legal error infected that instruction, we remand for a new trial on anticipation.

OBVIOUSNESS

Because Kent failed to make a motion for JMOL at any time during trial, we cannot weigh the sufficiency of the evidence underlying the jury's factual findings on obviousness. See Biodex, 946 F.2d at 862, 20 USPQ2d at 1261. Kent, however, preserved its right to seek relief from the verdict by making a motion for a new trial, which the magistrate judge denied. See New Idea Farm Equip. Corp. v. Sperry Corp., 916 F.2d 1561, 1565-66, 16 USPQ2d 1424, 1428 (Fed. Cir. 1990) (providing that, as an alternative to a post-verdict motion, court may grant motion for a new trial if prejudicial error occurred). This court reviews a denial of a motion for a new trial under the abuse of discretion standard. See Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1468, 43 USPQ2d 1481, 1486 (Fed. Cir. 1997). To that end, we must determine whether, in the conduct of the trial, an error occurred that was so egregious as to render the trial unfair. See DMI, Inc. v. Deere & Co., 802 F.2d 421, 427, 231 USPQ2d 276, 280 (Fed. Cir. 1986).

Rule 59(a) of the Federal Rules of Civil Procedure provides that a "new trial may be granted to . . . any of the parties . . . in an action in which there has been a trial by a jury, for any of the reasons for which new trials have heretofore been granted in actions at law in courts of the United States." Fed. R. Civ. P. 59(a); see Blue Diamond Co. v. Charles M. Allen & Son, Inc., 56 F.2d 1, 3 (5th Cir. 1932) (recognizing that newly discovered evidence can give rise to a right to a new trial). Kent contends that it is entitled to a new trial due to newly discovered evidence—namely, the Zhou deposition. Determining whether the newly discovered evidence warrants a new trial entails the following three-prong analysis: (1) the probability that the evidence would have changed the outcome of the trial; (2) whether the evidence could have been discovered earlier

through the moving party's due diligence; and (3) whether the evidence is merely cumulative or impeaching. See Farm Credit Bank v. Guidry, 110 F.3d 1147, 1155 (5th Cir. 1997); Diaz v. Methodist Hosp., 46 F.3d 492, 495 (5th Cir. 1995).

This court measures whether the newly discovered evidence is potentially outcome determinative by reference to our obviousness jurisprudence. A claimed invention is invalid for obviousness if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103(a) (1994); see Graham v. John Deere Co., 383 U.S. 1, 13-14 (1966). Obviousness is ultimately a question of law that rests on underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective considerations of nonobviousness. See Graham, 383 U.S. at 17-18; Robotic Vision Sys., Inc. v. View Eng'g, Inc., 189 F.3d 1370, 1376, 51 USPQ2d 1948, 1953 (Fed. Cir. 1999). Objective considerations such as failure by others to solve the problem and copying, see Graham, 383 U.S. at 17-18, "may often be the most probative and cogent evidence" of nonobviousness. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538, 218 USPQ 871, 879 (Fed. Cir. 1983).

In the present case, Zhou's deposition furnishes persuasive evidence that the West patent is nonobvious by describing ADS's repeated failures to design the claimed invention. In his deposition, Zhou testified that ADS was entirely unsuccessful in developing the cholesteric visible material through independent research. Zhou also explained that ADS "tried for a long time" to build an electrical driver, but its efforts "were all not successful." Zhou further detailed how ADS's attempts to develop a polymer-free LCD met with failure and that ADS "did not know how to design" the device until it copied the claimed invention. In addition, Zhou testified that, even after gaining access to the claimed invention, ADS was

unable to design around the West patent because such a task was time consuming and "very hard."

Our case law supports Kent's view that such evidence of failed attempts by others could be determinative on the issue of obviousness. For example, in Alco Standard Corp. v. Tennessee Valley Authority, this court held that when evidence in the record fully supports a finding that others in the industry failed to solve the problem, then objective considerations "may . . . establish that an invention appearing to have been obvious in light of the prior art was not." 808 F.2d 1490, 1500-01, 1 USPQ2d 1337, 1344-45 (Fed. Cir. 1986). Similarly, in Intel Corp. v. United States International Trade Commission, we reasoned that an accused infringer's inability to develop a product made possible by the claimed invention indicated nonobviousness. 946 F.2d 821, 835, 20 USPQ2d 1161, 1173 (Fed. Cir. 1991); see also Minnesota Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559, 1574, 24 USPQ2d 1321, 1333-34 (Fed. Cir. 1992) (reasoning that competitors' failure to develop the patented invention suggested nonobviousness); Panduit Corp. v. Dennison Mfg. Co., 774 F.2d 1082, 1099, 227 USPQ 337, 349 (Fed. Cir. 1985) (reasoning that failure by others, including the accused infringer, to develop the claimed invention constitutes "virtually irrefutable" evidence of nonobviousness), vacated Dennison Mfg. Co. v. Panduit Corp., 475 U.S. 809 (1986) (vacating for failure to give proper deference to district court's fact finding rather than legal error).

Zhou's deposition also provides compelling evidence of nonobviousness by illustrating ADS's wholesale copying of the claimed invention. See Specialty Composites v. Cabot Corp., 845 F.2d 981, 991, 6 USPQ2d 1601, 1608 (Fed. Cir. 1988) (reasoning that an accused infringer's close copying of the "claimed invention, rather than one in the public domain, is indicative of nonobviousness"). Indeed, Zhou's deposition reveals that ADS's device was virtually an identical replica of the claimed invention. Zhou testified that the Kent and ADS

"chemistry mixture[s] and the way[s] they make the cell are the same." Underlying that comparison was Zhou's testimony that ADS developed its cholesteric visible material by copying Kent's formula. Zhou also explained that ADS built its electrical driver by disassembling Kent's prototype, photographing its features, and then using the photograph essentially as an instruction manual. The import of such copying evidence merits even greater weight in view of ADS's failure to develop independently the claimed invention. See Dow Chem. Co. v. American Cyanamid Co., 816 F.2d 617, 622, 2 USPQ2d 1350, 1355 (Fed. Cir. 1987) (reasoning that an infringer's failed attempts to develop the claimed invention followed by subsequent copying of the invention supports a holding of nonobviousness); Vandenberg v. Dairy Equip. Co., 740 F.2d 1560, 1567, 224 USPQ 195, 199 (Fed. Cir. 1984) ("The copying of an invention may constitute evidence that the invention is not an obvious one. . . . This would be particularly true where the copyist had itself attempted for a substantial length of time to design a similar device, and had failed."). Furthermore, with respect to both objective considerations, Zhou's deposition testimony constitutes highly probative evidence of nonobviousness given that after initial deliberations the jury was in equipoise on the issue of obviousness, and this newly discovered evidence could have been the tipping factor for finding the West patent to be not invalid. Thus, we find that the constellation of facts contained in the Zhou deposition presents evidence that is potentially outcome determinative on the issue of obviousness.

We also hold that Kent exercised due diligence throughout the discovery process, but it was powerless to unearth the Zhou deposition because ADS deliberately and intentionally withheld the deposition and the photograph of Kent's prototype. In its first document request, Kent required: "All documents that refer or relate to any evaluation, analysis, examination, testing, performance, or investigation of any light-

modulating reflective device comprising [cholesteric material] or any compound thereof made by KDS, the [LCI], or any third party." In its interrogatories, Kent asked ADS to

> [I]dentify each communication that ADS, or its present or former . . . employees . . . has participated in or has knowledge of that refers or relates to [Kent] or products being developed, under research, under investigation, made, sold, or offered for sale by [Kent] or to any claims asserted by any party in this lawsuit or to any allegations that ADS has made against or about [Kent]. With reference to each communication, provide . . . the identity of all documents referring or relating to the communication . . . .

Any fair reading of the document request and interrogatory, coupled with ADS's duty to supplement its disclosures and responses under Rule 26(e) of the Federal Rules of Civil Procedure, required ADS to disclose the existence of the Zhou deposition and to produce the photograph of Kent's prototype. ADS, however, effectively concealed both pieces of evidence. With regard to the deposition, ADS's counsel instructed the court reporter not to prepare a transcript and then quickly abandoned the state court suit, thereby suppressing the existence of Zhou's deposition testimony. As for the photograph, which was initially produced at the deposition, ADS characterized it as "attorney work product." As a result, by preventing Kent from examining the photograph and inquiring about how ADS came to possess it, ADS completely sealed off Kent from discovering the existence of the Zhou deposition, much less its substance. In fact, the sole reason that Kent was able to discover that Zhou possessed crucial information was through its continued diligence. Midway through trial, Kent served a trial subpoena on Mr. Kan Xu, a former ADS employee, who then advised Kent that Zhou would be a useful witness to their case. Thus,

half-way through trial and by virtue of its own effort, Kent became aware of information that ADS's counsel was obligated to disclose months earlier during the normal course of discovery. Kent, however, still could not ascertain the full scope of Zhou's knowledge because it did not receive the deposition transcript until after the jury retired to deliberate.

We further hold that Zhou's deposition testimony is not merely cumulative or impeaching. Rather, Zhou's deposition contained a significant amount of material evidence that ADS prevented Kent from presenting at trial. For example, the jury did not hear Zhou's deposition testimony about how ADS obtained Kent's cholesteric formula, used that formula to duplicate Kent's cholesteric material, and then used that material in its own device; nor did the jury hear Zhou's admission that ADS's electrical driver was essentially the same as Kent's. The jury also did not hear Zhou's statements concerning the extent of ADS's failure to develop its own device or the detailed copying of Kent's prototype. Furthermore, the jury did not hear about ADS's failure to design around the claimed invention even after it disassembled and studied Kent's prototype.

Moreover, to the extent that some overlap exists between the Zhou deposition testimony and his trial testimony, we do not find it sufficient to preclude a new trial. To find otherwise would be to prejudice the party who acts diligently and complies with the Federal Rules of Civil Procedure and to benefit the party who contravenes those rules and uses dilatory discovery tactics. Indeed, one can readily imagine a situation in which counsel conceals material evidence throughout discovery and then reveals that evidence late into the trial, thereby depriving the other party of a fair trial in the first instance as well as foreclosing the opportunity for a new trial. Such a result would be manifestly unjust.

Thus, in light of the newly discovered evidence, we remand for a new trial on the issue of obviousness.

INFRINGEMENT

As with obviousness, Kent's only viable argument to alter the non-infringement verdict is through a motion for a new trial. Because the analysis for the last two prongs of the test for a motion for a new trial is the same for obviousness and infringement, we limit our discussion to the first prong—whether the newly discovered evidence is potentially outcome determinative on the issue of infringement.

To establish infringement a party must show that the accused device contains, either literally or by equivalents, every limitation of the claimed invention. See Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc., 98 F.3d 1563, 1574, 40 USPQ2d 1481, 1489 (Fed. Cir. 1996); Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934-35, 4 USPQ2d 1737, 1739-40 (Fed. Cir. 1987) (en banc). During the deposition, Zhou testified that the design of ADS's device was directly "based upon" Kent's cholesteric material formula and its electrical driver circuitry. Zhou also explained that the Kent's and ADS's "chemistry mixture[s] and the way they make the cell are the same." Zhou further testified that ADS failed to design a device that was different from the claimed invention.

Although not itself evidence of infringement, Zhou's deposition is compelling evidence relating to infringement. Zhou was one of the engineers who worked on ADS's device and possessed an intimate understanding of the similarities between ADS's device and the claimed invention. Zhou's deposition directly addresses how ADS's electrical driver circuitry was designed and implemented. That circuitry provides a waveform to change portions of the liquid crystal. The way in which ADS's device causes the liquid crystal to switch is material to the question of literal infringement because the West patent covers a particular method for stimulating the liquid crystal. In addition, the evidence of copying present in Zhou's deposition supports a claim of infringement under the doctrine of equivalents. See Graver Tank & Mfg. Co. v. Linde Air

Prods. Co., 339 U.S. 605, 612 (1950); Roton Barrier, Inc. v. Stanley Works, 79 F.3d 1112, 1126, 37 USPQ2d 1816, 1827 (Fed. Cir. 1994).

Furthermore, the impact of Zhou's deposition on the issue of infringement is not limited solely to the content of the deposition; rather, this evidence has ramifications that would have greatly changed the complexion of Kent's trial strategy. If Kent possessed this evidence before trial, it could have chosen to depose more witnesses—most notably Zhou, pursued different avenues of discovery, sought additional corroborating evidence, implemented different tactics during cross-examination, and so forth. In short, armed with the Zhou deposition at an early stage in discovery, Kent could have developed a different theory of the case and presented a more persuasive story at trial.

Accordingly, based on the newly discovered evidence, we remand for a new trial on infringement.

SANCTIONS

Following the jury verdict, Kent made a motion for sanctions against ADS's counsel, seeking sanctions in the form of new trial given ADS's suppression of the Zhou deposition and the photograph of Kent's prototype. The magistrate judge denied the motion but indicated that he was "deeply concerned" by the conduct of ADS's counsel. The magistrate judge also indicated that he would seriously consider taking disciplinary action under the local rules and imposing appropriate sanctions other than granting a new trial.

When reviewing a district court's decision on the propriety of imposing sanctions for misconduct during discovery, we apply the regional circuit's law. See Seal-Flex, Inc. v. Athletic Track & Court Constr., 172 F.3d 836, 845, 50 USPQ2d 1225, 1231 (Fed. Cir. 1999). The Fifth Circuit reviews a denial of sanctions for an abuse of discretion. See Tacon Mechanical Contractors, Inc. v. Aetna Cas. & Sur. Co., 65 F.3d 486, 489 (5th Cir. 1995). Although a district court possesses inherent

power to sanction an attorney's bad faith conduct during litigation, see Chambers v. NASCO, Inc., 501 U.S. 32, 43-46 (1991), the threshold for the imposition of such sanctions is high, see Chaves v. M/V Medina Star, 46 F.3d 153, 156 (5th Cir. 1995). Thus, the district court must make a specific finding of bad faith conduct in order to impose sanctions. See id. From the record below, it appears to this court that ADS's development of its LCD technology consisted of deceitful and conniving machinations that amounted to nothing short of corporate espionage of a competitor's valuable technology. Regretfully, the conduct of ADS's counsel in defending such actions was equally egregious. Indeed, to say that counsel's conduct during discovery raises the collective eyebrow of this court would be to understate the severity of their transgressions.

Counsel's tactics during discovery evinced a brazen disregard for the legal process. Throughout discovery, counsel's strategy consisted of efforts to obfuscate, cover-up, and subvert evidence that was properly discoverable and responsive to Kent's requests. For example, when confronted with the bleak realization that Zhou's deposition would reveal damaging information, ADS's counsel attempted to terminate the deposition. Counsel next tried to eliminate any trace of the deposition by instructing the court reporter not to make a transcript. Counsel then failed to disclose the deposition's existence during the discovery stage of the action. Counsel further failed to list Zhou as a person having knowledge of the development of ADS's LCD technology, even though he was an engineer at ADS working on the project during those years. Moreover, in what may be its most egregious discovery ploy, counsel characterized the photograph of Kent's prototype as "Attorney-Work product," even though the photograph was taken by an ADS employee years before the present litigation ensued. When asked about the justification for listing the photograph on the privilege log, ADS's counsel responded that the original photograph was photocopied by an attorney. This

court, however, is unable to find any legal principle that even remotely supports the notion that an otherwise discoverable document alchemically metamorphisizes into privileged work product simply because an attorney photocopies it.

Thus, we conclude that the suppression of the Zhou deposition and the concealment of the photograph through a spurious privilege claim, coupled with the central role that such evidence would have played at this trial, amounts to bad faith conduct on the part of ADS's counsel. In a case such as this, in which counsel deliberately and repeatedly flouts discovery requests and disregards the Federal Rules of Civil Procedure, the sanction of a new trial fits the transgression. Indeed, the acts of ADS's counsel strike at the heart of the discovery process, and they deprived Kent of its full measure of a right to a fair trial based upon all the relevant evidence. Accordingly, we reverse the magistrate judge's denial of a motion for sanctions by granting a new trial. Furthermore, we strongly encourage the magistrate judge to follow through on his desire to review very carefully the conduct of ADS's counsel and to consider, within his discretion, imposing disciplinary actions and additional sanctions beyond the granting of a new trial.

CONCLUSION

Based upon the discussion above, we vacate the judgment and remand for a new trial on the issue of anticipation because the magistrate judge's jury instruction contained prejudicial legal error. We also remand for a new trial on the issues of obviousness and infringement because of the newly discovered evidence. In addition, we also reverse the magistrate judge's ruling on sanctions by the grant of a new trial.

REVERSED-IN PART, VACATED-IN-PART, AND REMANDED.

COSTS: Costs to Kent

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
	§	
Plaintiff	§	No. 3-96-CV-1480-BD
	§	
v.	§	Consolidated With
	§	
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
	§	
Defendants	§	

ORDER DENYING KENT'S MOTION FOR NEW TRIAL

On or about January 13, 1998, Kent Display Systems, Inc., Kent Research Corporation, and Kent State University ("Kent") filed a Motion for New Trial on the grounds: (1) that the verdict entered by the jury on December 1, 1997 was against he great weight of the evidence; and (2) that Kent was entitled to a new trial based upon newly discovered evidence. The Motion has been briefed by all the parties and a hearing was held on the Motion on August 27,1998. After considering the Motion, the response and the arguments of counsel, and after the hearing, the Court is of the opinion that the Motion should be DENIED.

IT IS, THEREFORE, ORDERED ADJUDGED AND DECREED that the Motion for New Trial be and is hereby DENIED.

Dated: September 3, 1998

/s Jeffrey Kaplan
UNITED STATES MAGISTRATE JUDGE

APPROVED AS TO FORM:

/s Kevin Nash
Kevin Nash
Attorney for ADS

/s C. Michael Clark
C. Michael Clark
Attorney for Bao Gang Wu

/s L. Dan Tucker
L. Dan Tucker
Attorney for Kent Display Systems, Inc.

/s Thomas L. Cantrell
Attorney for Kent State University
and Kent Research Corporation

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
Plaintiff	§	No. 3-96-CV-1480-BD
v.	§	Consolidated With
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION	§	No. 3-96-CV-1608-BD
Defendants	§	

ORDER ON DEFENDANTS' MOTION FOR SANCTIONS

On January 13, 1998, Defendants Kent State University ("KSU"), Kent Display Systems, Inc., ("KDS"), and Kent Research Corporation ("KRC") filed a Motion for Sanctions seeking relief against Plaintiff Advanced Display Systems ("ADS"), Third Party Defendant Bao Gang Wu ("Wu"), Kevin C. Nash and Ling Chwang ("counsel for ADS") and Murray J. Rossini. Subsequently, the Motion was abandoned and/or withdrawn by KSU and KRC. Having considered the Motion and the memoranda and arguments of the sole remaining Movant (KDS) and following the hearing on August 27, 1998, the Court is of the opinion that the Motion should be DENIED. Therefore, it is:

ORDERED ADJUDGED AND DECREED that said MOTION be and is hereby DENIED.

September 3, 1998
DATE

/s Jeffrey Kaplan
UNITED STATES MAGISTRATE JUDGE

APPROVED AS TO FORM:

/s Kevin Nash
Kevin Nash
Attorney for ADS

/s C. Michael Clark
C. Michael Clark
Attorney for Bao Gang Wu

/s L. Dan Tucker
L. Dan Tucker
Attorney for Kent Display Systems, Inc.

/s Thomas L. Cantrell
Attorney for Kent State University
and Kent Research Corporation

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
	§	
Plaintiff	§	No. 3-96-CV-1480-BD
	§	
v.	§	Consolidated With
	§	
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
	§	Dallas, Texas
Defendants	§	August 27, 1997

HEARING ON MOTIONS
BEFORE HON. JEFF KAPLAN
U.S. MAGISTRATE JUDGE

...

THE COURT: The Court's authority to grant a new trial is set forth in Rule 59(a) of the Federal Rules of Civil Procedure. The rule provides that a new trial may be granted "for any of the reasons for which new trials have heretofore been granted in actions at law in the courts of the United States." On such reason is the discovery of new evidence that would have affected the outcome of the trial. The movant bears the burden of proving that the new evidence clearly raise [sic, weighs] in favor of a new trial. In resolving a motion on such grounds the Court must consider whether the admission of the evidence would probably have changed the outcome of the trial, the evidence could not have been discovered earlier with due diligence, and whether the evidence is merely cumulative or impeaching, but the Court's determination whether to grant a new trial cannot be reversed except for a clear abuse of discretion. However, that discretion is not unlimited and is controlled by the factors outlined above.

Assuming for the purposes of argument that the movant has established the first two factors, although I will tell you that I'm not at all convinced that the requisite nexus between the photograph and the Victor Zhou deposition and the claims made the basis of the patent involved in this case have been established, but assuming for the purpose of argument that such is the case, the Court finds that the movants have failed to establish that this evidence is anything other than cumulative or impeaching. The fact remains that Kent was able to get the photograph into evidence in this case and have Victor Zhou testify about it. Zhou testified in relevant part that Zibi [sic,Zvi] Yaniv brought the copyrighted prototype to ADS. That Jimmy Gau [sic, Gao] told ADS employees to take a picture of the prototype while Yaniv was absent, and that ADS only learned

how to drive the display after it had knowledge of the defendant's technologies. Therefore, it appears that the Kent defendants got the relevant facts into evidence and the Zhou deposition would have been merely cumulative.

The Kent defendants claim to have been hindered by not being allowed to question Victor Zhou about these matters during discovery where the standard of relevance is less stringent and inquiry could have been more far reaching. However, the Kent defendants do not specify what questions they were prevented from asking or how the rules of evidence prevented a full exploration of the issues.

The Kent defendants further argue that they did not have time to adequately prepare for Zhou's testimony or to determine what other relevant information he had, but give the testimony elicited from Zhou on the stand, it seems that however abbreviated their preparation, the defendants were fully able to prepare for his testimony. Moreover, the Kent defendants do not specify what other relevant information was denied to them by not having access to Zhou earlier. To the Court at least, his testimony appears to have covered all the relevant knowledge he possessed.

For these reasons, the motion for new trial is denied and the Court will enter judgment on the verdict.

As far as the motion for sanctions goes, I will tell you that I am deeply concerned not only with what the allegations are in the motion, but what the evidence and the inferences from that evidence seem to suggest. I think I have a pretty good idea of what went on at the Victor Zhou deposition in the State Court proceeding. The instructions not to transcribe that deposition testimony, and the abrupt dismissal of the State Court lawsuit on the eve of this patent trial, but my unsubstantiated suspicions standing alone are not sufficient to justify the imposition of sanctions. More pragmatically, as Mr. Tucker concedes, really this is not about the imposition of monetary sanctions. This about the attempt of the defendants to obtain a new trial, and

short of granting a new trial, I doubt that any sanction would be appropriate in this case. Accordingly, the motion for sanctions is denied. However, I will admonish Mr. Nash and anyone else that was involved in this case that the Court will take under consideration whether or not appropriate sanctions that are inherent in the Court's power to impose, should be imposed in this case, and will also consider whether or not further proceedings are necessary to develop an evidentiary record to determine whether or not disciplinary action under the local rules should be taken.

I think it's clear in my mind, although again there's no evidence to support this, that the deposition of Victor Zhou was concealed from the defendants. That the photograph was disclosed in a privilege log was concealed, that there were frivolous objections made to the production of that photograph, all of which concern the Court very much, but in the final analysis the photograph itself came into evidence, and as the Court previously stated, Victor Zhou testified and the defendants had an opportunity to examine him on the stand and have failed to elicit any additional evidence that they were prevented from developing at trial, and for those reasons a new trial isn't warranted.

. . .

United States Court of Appeals
for the Federal Circuit

99-1012,-1013

ADVANCED DISPLAY SYSTEMS, INC.,
Plaintiff-Appellee,

and

BAO GANG WU,
Third Party Defendant-Appellee,

v.

KENT STATE UNIVERSITY and KENT RESEARCH CORPORATION,
Defendants/Third Party
Plaintiffs-Appellants,

and

KENT DISPLAY SYSTEMS, INC.,
Defendant/Third Party
Plaintiff-Appellant.

ORDER

United States Court of Appeals
for the Federal Circuit

ORDER

A petition for rehearing en banc having been filed by the APPELLEES, and a response thereto having been invited by the court and filed by the APPELLANTS, and the matter having first been referred as a petition for rehearing to the panel that heard the appeal, and thereafter the petition for rehearing en banc and response thereto having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on August 31, 2000.

FOR THE COURT
/s Jan Hornably
Jan Hornably
Clerk

Dated: August 24, 2000

FILED
U.S. COURT OF APPEALS FOR
THE FEDERAL CIRCUIT
AUG 24 2000
JAN HORNABLY
CLERK

United States Court of Appeals
for the Federal Circuit
99-1012,-1013

ADVANCED DISPLAY SYSTEMS, INC.,
Plaintiff-Appellee,

and

BAO GANG WU,
Third Party Defendant-Appellee,

v.

KENT STATE UNIVERSITY and KENT RESEARCH CORPORATION,
Defendants/Third Party
Plaintiffs-Appellants,

and

KENT DISPLAY SYSTEMS, INC.,
Defendant/Third Party
Plaintiff-Appellant.

Judgment

ON APPEAL from the	UNITED STATES DISTRICT COURT FROM THE NORTHERN DISTRICT OF TEXAS
In CASES NO(S)	96-CV-1480 and 96-CV-1608

This CAUSE having been heard and considered, it is

ORDERED and ADJUDGED:

REVERSED-IN-PART, VACATED-IN-PART, AND REMANDED

ENTERED BY ORDER OF THE COURT

Dated: MAY 18, 2000

/s Jan Horbaly
Jan Horbaly, Clerk

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
	§	
Plaintiff	§	No. 3-96-CV-1480-BD
	§	
v.	§	Consolidated With
	§	
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
	§	
Defendants	§	

FINAL JUDGMENT

The Court hereby renders judgment on the jury verdict of December 1, 1997. Particularly, it is rendered and decreed that:

1. Claims 1-10 of the Patent in suit (U.S. Patent No. 5,453,863, referred to as the "West Patent") are anticipated by U.S. Patent 4,097,127 (referred to as the "Haas Patent") as a whole;

2. The differences, if any, between the subject matter defined by claims 1-10 of the West Patent and the prior art are such that the subject matter

of those claims, as a whole, would have been obvious to a person having ordinary skill in the art at the time the invention was made;

3. ADS has not made, used, sold or offered to sell products/methods which infringe, either literally or under the doctrine of equivalents, claims 1-8 or 10 of the West Patent;

4. Third Party Defendant, Bao Gang Wu (referred to as "Wu") has not intentionally induced ADS to infringe claims 1-9 or 10 of the West Patent;

5. ADS infringement, if any, of the West Patent was not willful;

6. The amount of money, if paid now in cash, which would fairly and reasonably compensate Kent Display Systems, Inc. (referred to as "KDS") for damages it has suffered from any infringement of the West Patent by ADS or Wu is zero dollars; and

7. The amount of money, in now paid in cash, which would represent a reasonable royalty to KDS for the sale or use of products or methods by ADS is zero dollars.

Further, it is ORDERED and DECREED that all costs of court shall be borne, jointly and severally, by Defendants/Third Party Plaintiffs Kent State University, Kent Research Corporation and Kent Display Systems, Inc.., for which ADS and Wu shall submit a bill of costs.

Finally, it is ORDERED and DECREED that all other

remaining claims for relief which have not been previously dismissed, either legal or equitable, which are not expressly reached herein and which have been asserted by any party are hereby denied with prejudice.

Signed on this 3rd day of September, 1998

/s Jeffrey Kaplan
UNITED STATES MAGISTRATE JUDGE

APPROVED AS TO FORM:

/s Kevin Nash
Kevin Nash
Attorney for ADS

/s C. Michael Clark
C. Michael Clark
Attorney for Bao Gang Wu

/s L. Dan Tucker
L. Dan Tucker
Attorney for Kent Display Systems, Inc.

/s Thomas L. Cantrell
Attorney for Kent State University
and Kent Research Corporation

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
Plaintiff	§	No. 3-96-CV-1480-BD
v.	§	Consolidated With
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
Defendants	§	

VERDICT FORM

We, the jury, have answered the foregoing questions and return the same as our verdict in this case.

DATED: December 1, 1997

/s Dennis Erwin
Presiding Juror

JURY QUESTIONS
(Answer All Questions)

1. Have ADS and Wu proven by clear and convincing evidence that the subject matter of claims 1-10 was anticipated by the Haas Patent as a whole ?

Check "yes" or "no" for each of the following claims:

	Yes	No
(a) Claim 1	√	
(b) Claim 2	√	
(c) Claim 3	√	
(d) Claim 4	√	
(e) Claim 5	√	
(f) Claim 6	√	
(g) Claim 7	√	
(h) Claim 8	√	
(i) Claim 9	√	
(j) Claim 10	√	

2. Have ADS and Wu proven by clear and convincing evidence that the difference, if any, between the subject matter defined by Claims 1-10 of the West Patent and the prior art are such that the subject matter of those claims, as a whole, would have been obvious to a person having ordinary skill at the time the invention was made ?

Check "yes" or "no" for each of the following claims:

	Yes	No
(a) Claim 1	√	

(b) Claim 2	√
(c) Claim 3	√
(d) Claim 4	√
(e) Claim 5	√
(f) Claim 6	√
(g) Claim 7	√
(h) Claim 8	√
(i) Claim 9	√
(j) Claim 10	√

3 Has Kent proven by a preponderance of evidence that any of the products/methods ADS has made, used, sold, or offered for sale literally infringe any of the following claims of the West Patent ?

Check "yes" or "no" for each of the following claims:

	Yes	No
(a) Claim 1		√
(b) Claim 2		√
(c) Claim 3		√
(d) Claim 4		√
(e) Claim 5		√
(f) Claim 6		√
(g) Claim 7		√
(h) Claim 8		√
(i) Claim 9		√
(j) Claim 10		√

4 Has Kent proven by a preponderance of evidence that any of the products/methods ADS has made, used, sold, or offered for sale infringed any of the following claims of the West Patent under the "doctrine of equivalents" ?

Check "yes" or "no" for each of the following claims:

	Yes	No
(a) Claim 1		√
(b) Claim 2		√
(c) Claim 3		√
(d) Claim 4		√
(e) Claim 5		√
(f) Claim 6		√
(g) Claim 7		√
(h) Claim 8		√
(i) Claim 9		√
(j) Claim 10		√

5 Has Kent proven by a preponderance of the evidence that Dr. Wu has intentionally induced ADS to infringe any of the following claims of the West Patent ?

Check "yes" or "no" for each of the following claims:

	Yes	No
(a) Claim 1		√
(b) Claim 2		√
(c) Claim 3		√
(d) Claim 4		√
(e) Claim 5		√
(f) Claim 6		√
(g) Claim 7		√
(h) Claim 8		√
(i) Claim 9		√

(j) Claim 10 ✓

6. Has Kent proven by clear and convincing evidence that ADS' infringement, if any, of the patent in suit was willful?

Answer "yes" or "no"

Answer: **NO**

7. What amount of money, if now paid in cash, would fairly and reasonably compensate KDS for the damages it has suffered from any infringement by ADS and Wu ?

Answer in dollars and cents, if any, for such damages.

$ 0

8 What amount of money, if paid now in cash, would represent a reasonable royalty to KDS for the sale or use of products or methods by ADS ?

Answer in dollars and cents, if any, for such damages.

$ 0

CLAIMS CONSTRUCTION CHART
(Adopted by District Court and Submitted to Jury)

CLAIM NUMBER/ELEMENT	INTERPRETATION
CLAIM 1	
A light modulating	is capable to displaying different optical states.
polymer free	Does not contain polymer.
reflective cell	A cell that is designed to reflect light.
comprising cell wall structure	A cell comprising two substrates of which one, at least, is transparent. "Comprising" is an open-ended transitional phrase.
and a chiral nematic liquid crystal light modulating material	Also referred to as cholesteric liquid crystal material, this element comprises a mixture of a nematic and an optically active or chiral material.
having positive dielectric anisotropy	The dielectric constant parallel to the long axes of the long rod-like molecules is greater than the dielectric constant perpendicular to the long axes. The long molecular axes of the liquid crystal molecules typically align themselves in the direction of an electric field.

and a pitch length effective to reflect light in the visible spectrum	A pitch length that is capable of displaying color.
said cell wall structure and liquid crystal cooperating to form focal conic and twisted planar textures	(a) "said cell wall structure" described above. (b) "liquid crystal" described above. (c) "cooperating to form focal conic texture"; The focal conic (or light scattering) texture may be assumed by the material when it is first placed in the cell or it may be obtained by application of an electric field pulse, as defined below. (D) "and twisted planar texture" The twisted planar (or Grandjean or light reflecting) texture may be assumed by the material when it is first placed in the cell or it may be obtained by application of an electric field pulse, as defined below.
that are stable in the absence of a field, and	"The light scattering and light reflecting states remain stable at zero field." (Col. 2, lines 34 - 35).

means for addressing said liquid crystal material,	Construed in accordance with § 112(6) to cover the corresponding structure described in the specification, i.e., Fig. 1 (and corresponding description), col. 4, lines 35-44, 52-60, col. 6, lines 47-65, namely a power supply connected to patterned electrodes, active matrixes, and multiplexing circuits, and equivalents thereof.
said means adapted to selectively establish an electric field pulse of a magnitude effective to transform at least a portion of said liquid crystal from a focal conic texture to a light reflecting twisted planar toxture [sic, texture], and	The corresponding structure described in the specification, namely a power supply connected to patterned electrodes, active matrixes, and multiplexing circuits, and equivalents thereof having the necessary hardware/software to selectively provide an "electric field pulse" with an amplitude and duration sufficient to transform some portion of the liquid crystal from a focal conic texture to a light reflecting twisted planar texture. The pulse is not limited to a specific rise or decay time.

an electric field pulse of a sufficient magnitude effective to transform at least a portion of said liquid crystal from a light reflecting twisted planar texture to a focal conic texture	The corresponding structure described in the specification, namely a power supply connected to patterned electrodes, active matrixes, and multiplexing circuits, and equivalents thereof having the necessary hardware/software to selectively provide an "electric field pulse" with an amplitude and duration sufficient to transform some portion of the liquid crystal from a focal conic texture to a light reflecting twisted planar texture. The pulse is not limited to a specific rise or decay time.
CLAIM 2	
The cell as claimed in claim 1 wherein	A cell comprising two substrates of which one, at least, is transparent. Dependent on Claim 1 and therefore includes all of the limitations of Claim 1.

the liquid crystal exhibits a stable light reflecting twisted planar structure following sudden removal of an electric field pulse effective to homeotropically align the liquid crystal, and	If an electric field pulse sufficient to homeotropically align the liquid crystal directors is maintained, the material is essentially transparent until the field is removed. When the pulse is removed quickly, the material reforms to the light reflecting planar state. The "electric field pulse" has the same meaning as in Claim 1 above, however the decay time is "sudden."
a stable light scattering focal conic texture following a removal of an electric field pulse below that which will homeotropically align the liquid crystal.	The material exhibits the focal conic texture following removal of the electric field pulse. The "electric field pulse," as defined in Claim 1 above, must be below that which will homeotropically align the liquid crystal.
CLAIM 3	
A method of addressing a light modulating material	Same construction for "light modulating" and "cell" as in Claim 1 above. "Addressing" discussed below in conjunction with "means for addressing."
comprising a chiral nematic liquid crystalline light modulating material	Same construction as in Claim 1 above.
having positive dielectric anisotropy	Same construction as in Claim 1 above.

and a pitch length effective to reflect light in the visible spectrum,	Same construction as in Claim 1 above.
cell wall structure and liquid crystal cooperating to form focal conic and twisted planar textures that are stable in the absence of a field, and	Same construction as in Claim 1 above.
means for addressing said liquid crystal material,	Construed as an apparatus limitation in accordance with § 112(6) to cover the corresponding structure described in the specification, i.e., Fig. 1 (and corresponding description), col. 4, lines 35-44, 52-60, col. 6, lines 47-65, namely a power supply connected to patterned electrodes, active matrixes, and multiplexing circuits, and equivalents thereof.

said method comprising selectively applying electric field pulses to said material of a magnitude effective to transform at least a portion of said liquid crystal from a focal conic texture to a light reflecting twisted planar texture, or to transform at least a portion of said liquid crystal from a light reflecting twisted planar texture to a focal conic texture.	Transition phrase "comprising" means that the claimed method includes the recited steps, but may include additional steps. Limitation is not construed as a step-plus-function limitation under § 112(6). In a reversible system, the method requires the selective application of an "electric field pulse" having an amplitude and duration sufficient to transform some portion of the liquid crystal material from a focal conic texture to a light reflecting twisted planar texture, or, alternatively, to transform some portion of the liquid crystal from a light reflecting twisted planar texture to a focal conic texture. The pulse is not limited to a specific rise or decay time.
CLAIM 4	
The method according to claim 3	Dependent on Claim 3 and therefore includes all limitations of Claim 3.

comprising selectively switching said material to a light reflecting twisted planar texture following the sudden removal of an electric field pulse of a magnitude sufficient to homeotropically align the liquid crystal, and	The claim additionally requires the liquid crystal exhibit the planar texture following sudden removal of a pulse sufficient to homeotropically align the liquid crystal.
a light scattering focal conic texture following removal of an electric field pulse of a magnitude below that which will homeotropically align the liquid crystal.	The claim additionally requires the liquid crystal exhibit the planar texture following sudden removal of a pulse sufficient to homeotropically align the liquid crystal.
CLAIM 5	
The method according to claim 3 comprising applying square A.C. voltage pulses.	Plain English language meaning. The pulses applied are square AC voltage pulses.
CLAIM 6	
A method of selectively adjusting the intensity of reflection of colored light	Overall, the method is directed to producing "grey scale"

from a polymer free chiral nematic liquid crystalline light modulating material having positive dielectric anisotropy and a pitch length effective to reflect light in the visible spectrum,	Terms have the same meanings as in Claim 1 above.
and cell wall structure cooperating with said liquid crystal to form focal conic and twisted planar textures that are stable in the absence of a field,	Terms have the same meanings as in Claim 1 above.
between a maximum and a minimum intensity,	Plain English language meaning.
the method comprising	Transition phrase "comprising" means that method includes, but is not limited to, the following steps.
subjecting said material to an electric field pulse of sufficient duration and voltage to cause a first proportion of said chiral nematic material to exhibit a twisted planar texture in the absence of a field and	Requires the application of an "electric field pulse" having an amplitude/voltage and duration sufficient to cause some portion of the liquid crystal to exhibit a twisted planar texture.

a second proportion of said chiral nematic material to exhibit a focal conic texture in the absence of a field,	Requires the application of an "electric field pulse" having an amplitude/voltage and duration sufficient to cause some portion of the liquid crystal to exhibit a focal conic texture. This limitation in conjunction with the preceding limitation results in a mixture of focal conic and twisted planar textures.
whereby said material will continuously reflect a selected intensity between said maximum and minimum that is proportional to the amount of said material in said focal conic and twisted planar textures in the absence of a field.	The material reflects light within the grey scale proportional to the amount of material in the focal conic and twisted planar textures, and is stable in the absence of a field.
CLAIM 7	
A light modulating polymer free device,	Terms have same construction as in Claim 1.
comprising cell wall structure,	Terms have same construction as in Claim 1.
and a chiral nematic liquid crystal light modulating material,	Terms have same construction as in Claim 1.
having positive dielectric anisotropy,	Terms have same construction as in Claim 1.

and a pitch length effective to reflect light in the visible spectrum,	Terms have same construction as in Claim 1.
said cell wall structure and liquid crystal cooperating to form focal conic and twisted planar textures that are stable in the absence of a field,	Terms have same construction as in Claim 1.
wherein a first proportion of said material exhibits a twisted planar texture in the absence of a field and second proportion of said material exhibits a focal conic texture in the absence of a field, and	"wherein a first proportion of said material exhibits a twisted planar texture" means something less than 100 percent of the material exhibits the twisted planar texture, and "second proportion" means something less than 100 percent of the material exhibits the focal conic texture.
means for establishing an electrical field through said material,	Construed in accordance with § 112(6) to cover the corresponding structure described in the specification, i.e., Fig. 1 (and corresponding description), col. 4, lines 35-44, 52-60, col. 6, lines 47-65, namely a power supply connected to patterned electrodes, active matrixes, and multiplexing circuits, and equivalents thereof.

said means adapted to provide an electric field pulse of sufficient amplitude and duration to change the proportion of said material in said twisted planar and focal conic textures, whereby the intensity of light reflected may be selectively adjusted.	The corresponding structure described in the specification, namely a power supply connected to patterned electrodes, active matrixes, and multiplexing circuits, and equivalents thereof having the necessary hardware/software to selectively provide an "electric field pulse" with an amplitude and duration sufficient to change the proportion of the liquid crystal in the twisted planar and focal conic textures thereby selectively adjusting the intensity of the light being reflected.
CLAIM 8	
The device according to claim 1 and 7 wherein	Includes the limitations of either Claims 1 or 7.
said cell wall structure is treated to align the liquid crystal	Some surface treatment beyond simply an electrode.
CLAIM 9	
The device according to claim 1 or 7 wherein	Includes the limitations of either Claims 1 or 7.
said cell wall structure is treated homeotropically align said liquid crystal.	The device employs a surface treatment that homeotropically aligns the liquid crystal.
CLAIM 10	

The device according to claim 7 wherein	Includes the limitations of Claim 7.
said means for establishing a field through said material is adapted to provide an AC pulse.	The corresponding structure described in the specification and equivalents thereof (see Claim 7 above) has the necessary components to provide an AC pulse.

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
Plaintiff	§	No. 3-96-CV-1480-BD
v.	§	Consolidated With
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
Defendants	§	

NOTICE OF APPEAL OF KENT DISPLAY SYSTEMS, INC.

Notice is hereby given that Kent Display System, Inc. ("KDS"), defendant/third party plaintiff in the above named case, hereby appeals to the United States Court of Appeals for the Federal Circuit from: (1) the final judgment entered in this action on the 3rd day of September, 1998; (2) the order denying KDS's motion for new trial entered on this action on the 3rd day of September, 1998; and (3) the order denying KDS's motion for sanctions entered in this action on the 3rd day of September, 1998.

Respectfully Submitted

/s L. Dan Tucker

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IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
Plaintiff	§	No. 3-96-CV-1480-BD
v.	§	Consolidated With
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
Defendants	§	

NOTICE OF APPEAL OF KENT STATE UNIVERSITY AND KENT RESEARCH CORPORATION

Notice is hereby given that Kent State University and Kent Research Corporation (collectively, "Kent"), defendants/third party plaintiff in the above named case, hereby appeal to the United States Court of Appeals for the Federal Circuit from: (1) the final judgment entered in this action on the 3rd day of September, 1998; (2) the order denying Kent's motion for new trial entered on this action on the 3rd day of September, 1998.

Respectfully Submitted

/s Thomas L. Cantrell

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IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
Plaintiff	§	No. 3-96-CV-1480-BD
v.	§	Consolidated With
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
Defendants	§	Dallas, Texas November 18, 1997

TRIAL ON THE MERITS
VOLUME VIII
BEFORE THE HONORABLE JEFF KAPLAN
UNITED STATES MAGISTRATE AND A JURY

(Jury present.)

THE COURT: You may be seated. Members of the jury I apologize for the long delay. Believe it or not, I just got off the bench from a hearing upstairs. That's the reason we're running about an hour late.

You may bring in your next witness, please.

MS. GEBAUER: Victor Zhou.

THE COURT: Mr. Zhou, raise your hand to be sworn, sir.

(Witness sworn by the Court.)

THE COURT: You may be seated, sir. You may proceed.

HONGXI ZHOU, Plaintiff witness, sworn

EXAMINATION

BY MS. GEBAUER:

Q Would you state your name, please.

A My real name Hongxi. My last name Zhou.

Q Do you go by the name Victor?

A Yes. They call me Victor, but it's not real.

Q I just want you to spell out your first name.

A Okay. It's H, like Henry, O-N-G-X-I

Q Is that correct?

A Yes, that's correct.

Q And your last name is --

A Z-H-O-U.

Q Is it Mr. or Dr. ?

A Mr.

Q Mr. Zhou, where do you live?

A Now?

Q Yes.

A In Dallas.

Q Can you give us your address?

A Yes It is 12920 Audelia Road, Apartment Number 268.

Q And where do you work, sir?

A Texas Instruments now.

Q Texas Instruments?

A Yes.

Q How long have you worked at Texas Instruments?

A About two years.

Q So approximately 1995?

A Yes.

Q Where did you work before Texas Instruments?

A Twin Star.

Q I'm sorry?

A Twin Star. Twin Star Semiconductors.

Q Twin Star Semiconductors?

A Yes

Q How long did you work there?

A About three months.

Q Prior to that where did you work?

A Advanced Display Systems, AD'S.

Q Is than Dr. Wu's company?

A Yes, sure.

Q What was your position at Dr. Wu's company?

A Engineer.

Q What's your educational background, Mr. Zhou?

A I have two master degree - - one is in chemical physics, the other in physical chemistry -- and I have a bachelor in physics.

Q And I interrupted you. What was your position at Advanced Display Systems?

A I'm an engineer, electro-optic engineer.

Q And how long did you work at Advanced Display Systems?

A I cannot remember exactly. About two years, two and a half or something. Two years, yes.

Q During that time, Mr. Zhou, did you have occasion to see a prototype display made by Kent Display?

A Yes.

Q Can you tell us how that happened?

A I cannon remember when -- maybe late of '93 or sometime in '94 -- Dr. Zvi Yaniv from KDS visit ADS.

Q Now, did you say the name Zvi Yaniv?

A Yes, Dr. Zvi Yaniv.

Q And who did you -- who was Dr. Yaniv?

A He was the president of KDS, if I remember right

Q And what happened when Dr. Yaniv came to visit ADS?

A He brought a demo unit for their bistability displays with a driver, electronic driver, not only tine glass piece.

Q And what did Dr. Yaniv do with that display?

A I don't know what it was his purpose, but he brought the demo unit to ADS.

Q And what happened with the demo unit at ADS?

A Dr. Zvi Yaniv was with Dr. Wu – probably went to lunch - - and Jimmy Gao, my supervisor, the manager of our R&D group, he brought the demo unit to our lab and he told us to open the cover, took a picture, and we did.

Q Did he tell you to hurry?

A Yeah. He said, hurry up, but I don't know what's the reason. But he said that.

Q The man's name that told you to do this, Mr.

Zhou, was what?

A You mean Jimmy Gao? Yeah. His first name J-I -- no – yeah -- N-M-I. The last name Gao. He was the. vice president of ADS and the manager for the R and D group.

Q He was the manager of the research and developrnent group?

A Yes, he was.

Q Was the Kent Display prototype disassembled?

A Yeah, disassembled and the picture taken.

Q Did vou bring that picture with you today?

A Yes, I have the picture here.

Q Could you show it to me, please?

MS. GEBAUER: Your Honor, I'd like to mark this as an exhibit.

THE COURT: What's the next number?

MS. GEBAUER: I don't know. Could we just mark it ?

THE COURT: I'd prefer to go in order. Does anybody have a current exhibit list?

THE WITNESS: There's a mark on the back side.

THE COURT: Hold on, Mr. Zhou.

MS. ARCENEAUX: 333 was the last exhibit.

THE COURT: 334 sounds about right

(Exhibit No. 334 marked.)

Q Mr. Zhou, I'm showing you Exhibit 334. Is that the photograph that came out of your files?

A Yeah.

Q Is that the photograph that was taken of the Kent Display prototype?

A Yes.

Q At ADS?

A Yes.

Q At the direction of Jianmi Gao ?

A Yes.

Q The director of research and development ?

A Yes.

Q Mr. Zhou, there's a – can you tell me what this photograph is of ?

A Yeah. This picture shows the driver electronics for the KDS called a bistable display but KDS called a multistable display. Basically they are same, and they use this driver to write the information on a glass piece, glass part.

Q Now, there's some indication on that driver that says KDS, doesn't it ?

A Yeah. That's KDS copyright 1993. It's here.

THE COURT: Ms. Gebauer1 that hasn't been admitted

MS. GEBAUER: I'm sorry. I'm moving to admit.

THE COURT: Any objections?

MR. NASH: No foundation has been laid to it with the cholesteric technology in this lawsuit.

THE COURT: Ms. Gebauer?

MS. GEBAUER: Mr. Zhou just testified that the bistable display of Kent Display that ADS refers this was to as their MLCD technology and that basically they're the same.

THE COURT: Why don't you ask him ~ few more questions.

BY MS. GEBAUER: Well, Mr. Zhou, Dr. Yaniv brought this prototype display?

A Yes.

Q It's the cholesteric prototype display from Kent Display?

A Yes, that's right. Basically they are cholesteric liquid crystal display between two piece of glasses.

Q And this driver was how it was addressed, is that correct?

A Yes, that's right.

Q And what was the display a picture of?

A On the KDS demo? Cannot remember that. Probably there was a K, big character K, and there were other characters. I cannot remember

Q Was it a polymer-free display?

A That I don't know, if there was polymer or no polymer. I don't know.

Q You don't know that?

A You cannot tell without doing an analysis.

Q And you didn't take out the fluid when you disassembled the cell, did you?

A No. Cannot do that

MS. GEBAUER: Your Honor, I'll move to admit that. We'll connect it up.

THE COURT: Mr. Nash?

MR. NASH: Same objection.

THE COURT: Objection is overruled.

BY MS. GEBAUER.

Q On your monitor, Mr. Zhou1 is that the KDS copyright that was on the device that was photographed?

A Yes. Yes, it is.

Q Do you see initials after there?

A Yes, like a JW. Yeah.

Q Do you know what that stands for?
A I don't know what that stand for. Don't know. I never noticed that.

Q Is this a multiplexing circuit, Mr. Zhou?

A Yes.

Q I'm sorry. What was your answer?

A Say it again.

Q Is this a multiplexing circuit?

A Yeah, multiplexing was for the microprocessor, not for the drivers. Actually, on the circuit you can change the microprocessor. That's not important. But the important thing is the two drivers, two driver chips.

Q Had ADS been able to address its displays prior to the time this photograph was taken?

A No. We did not know how to drive the display.

Q Did you learn how to do that after this photograph was taken?

A Yeah, sure.

Q Did you use this photograph to design a driver for the ADS displays ?

A Yeah. We identify the part number for the two drivers. That was 6008. You can identify the little two square chips –

Q Am I looking at the right –

A No, that's a microprocessor. That way.

Q I'll tell you what. Could you show me on the photograph ?

A Yeah. This one and this one.

Q Thank you.

A Yes, you got the right one.

Q Are there numbers on there?

A Yes, HUV6008PG. You got it upside down.

Q Okay.

A Yeah, right direction.

Q There is a number on there?

A Yeah.

Q What does the number tell you?

A That tell me the part number. With that number we can find that part on the market.

Q And there was a second one?

A Yeah.

Q Is that it ?

A Same one, same thing.

Q How many people at ADS got a copy of this photograph ?

A I only know two. One is me, the other is George Guo.

Q How do you spell that name?

A His English name George. I don't know what his Chinese name. G-E-O-R-G-E.

Q George?

A His last name G-U-O.

Q Did he work in the R and D department at Advanced Display Systems ?

A No, he did not. He worked for the equipment department, but he was an electronics engineer

in ADS.

Q Is that why he was given a copy of the photo?

A Yeah, that's why Jimmy gave him a copy also.

Q Did Jimmy give you a copy ?

A Yes, he gave me one copy, that one.

Q Exhibit 334 is the copy you received from Jimmy Gao?

A Yes.

Q Mr. Zhou, did ADS take this photograph to the University of Texas at Dallas to seek help in designing a driver?

A No. No, at that time, no.

Q Did they do it later ?

A I don't know. They took this picture, and they have George and me to design the driver at that time.

Q So you and George used the picture to design the driver?

A Right, we designed the first demo unit.

Q For ADS?

A Yes.

Q And this occurred in late 1993 or early 1994?

A I don't remember exactly time, but it may be that -- in that range.

Q Who took the photograph?

A If I remember right, that was ADS photographer, Richeng Gao.

Q That's another name?

A Yeah.

Q That is another name who was present in the room when the photograph was taken?

A Jeff Chen, Richeng Gao, me, and Jimmy Gao

Q So those are four people who work at ADS?

A Maybe more than that, but that's the only people I can remember.

Q Okay. So the folks you can remember, Mr. Zhou, is yourself - -

A Yes.

Q - - Jimmy Gao?

A Jimmy Gao, yeah.

Q Who was the third one?

A Richeng, R-I-C-H-E-N-G, Gao. Same as Jimmy's last name.

Q Are they related?

A I don't think so.

Q And who was the fourth person?

A Jeff Chen. Jeff -- he has an English name - - Chen, C-H-E-N.

Q Are all these four individuals employees of Advanced Display Systems?

A Yes.

Q At the time this photo was taken?

A Yes.

Q And at the time the display was dismantled?

A Yes.

Q Mr. Zhou, you had your deposition taken; is that correct?

A Yes.

Q And that was in a lawsuit between Advanced Display Systems and Mr. Xu; is that correct? Kan Xu.

A Kan Xu, right, U.S.A. Display under ADS.

Q And you had your deposition taken a few weeks ago; is that correct?

A Sometimes in September I got a subpoena here. I can find exact date. It's –yeah, it is August 29th. August 29th.

Q May I see the subpoena ?

A Yes.

MS. GEBAUER: May I mark the document, Your Honor?

THE COURT: May you mark the subpoena?

MS. GEBAUER: Yes.

THE COURT: Yes, you can mark the subpoena.

(Exhibit No. 336 marked)

BY MS. GEBAUER:

Q Mr. Zhou, I'm going to hand you back the subpoena. It's been marked Exhibit 335 up in the right-hand corner. Can you tell me what that document is?

A That's a subpoena between -- that's ADS Display against U S.A. Display, Kan Xu.

Q And did you receive a subpoena?

A Yeah, I receive that before the deposition, few days before that.

Q Were you actually personally served with it?

A Yeah.

Q Where was that at?

A It was in Attorney Hsueh's office. I don't remember the street number.

Q Okay.

A It's in Dallas.

Q Is there an indication in there of who was representing Advanced Display Systems ?

A There are two attorneys' name on here. One Is a Kevin Nash; one is a Murray Rossini. But in that deposition I only saw Murray Rossini.

Q Mr. Nash wasn't at the deposition? Mr. Nash –

A I did not saw him -- I did not see him.

Q Could I see that again?

A Let me find it for you.

Q I have it. Mr. Zhou, do Mr. Rossini and Mr. Nash have the same address on the subpoena ?

A Yes, they got same address on here.

Q And was your deposition taken on August 29th ?

A Yes.

MS. GEBAUER: I move to admit Exhibit 335.

THE COURT: Any objection?

MR. NASH: No, Your Honor.

THE COURT: It's admitted.

BY MS. GEBAUER:

Q At that deposition, Mr. Zhou, did you produce the photograph?

A Yes, I produced the one copy.

Q In fact, Mr. Zhou, there was a deposition exhibit number on the back of the photograph: isn't that correct?

A Yes.

Q It says Zhou Exhibit 3, doesn't it?

A Yes, that's right.

Q What happened when you produced that photograph during the deposition, Mr. Zhou ?

A I don't remember that part.

Q You don't remember ?

A I did not reproduce. Murray Rossini did that.

Q Did what ?

A Made the copy.

Q He made a copy of the photograph ?

A Yes.

Q And he gave you back the original?

A Yeah, gave me the original and this. I got a -- received one copy. I believe the other people there also received this copy.

Q Who else was there?

A U.S.A. Display's attorney. There was two attorneys there, and also the -- Murray Rossini and also the lady who take the record.

Q Like our court reporter, Mr. Zhou ?

A Yeah, yeah, court reporter, yes.

Q Mr. Zhou, when was the first time you spoke to anyone from Kent Display Systems?

A Would you say it again? I'm sorry.

Q When was the first time you spoke to any lawyer representing Kent Display Systems?

A Sometime last week. Dan Tucker called me. It was Saturday. I was at work in TI office. He called me.

Q And that was this last Saturday?

A Yes, the past Saturday.

Q So a few days ago?

A Yeah. November 15th.

Q And did you call Mr. Tucker back?

A I was at office when he called me, so I took his call.

Q So he found you there?

A Yeah, he found me. He paged me maybe later on, but I did not reply that day. I was very, very busy that day.

MS. GEBAUER: Pass the witness.

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

ADVANCED DISPLAY SYSTEMS, INC.	§	
	§	
Plaintiff	§	No. 3-96-CV-1480-BD
	§	
v.	§	Consolidated With
	§	
KENT STATE UNIVERSITY, KENT DISPLAY SYSTEMS and KENT RESEARCH CORPORATION,	§	No. 3-96-CV-1608-BD
	§	Dallas, Texas
Defendants	§	November 18, 1997

TRIAL ON THE MERITS
VOLUME VIII
BEFORE THE HONORABLE JEFF KAPLAN
UNITED STATES MAGISTRATE AND A JURY

THE COURT: Mr. Nash

MR. NASH: Your Honor.

CROSS EXAMINATION

BY MR. NASH:

Q Mr. -- excuse me. Is it Mr. or Dr. Zhou?

A Mr. Zhou.

Q Mr. Zhou. Excuse me. You were one of the inventors – named inventors on the patent that was issued to Dr. Wu?

A Yes

...

Q Is that the patent that actually issued :0 ADS?

A I don't know. No one tell me that.

Q You never --

A After I left ADS, no one tell me anything about either the patent was issue or not.

Q But you did sign, as an inventor, didn't you, sir, a declaration in support of that patent?

A Yes. I remember Dr. Wu drove me and Jimmy Gao and others to the attorney's office and have them sign -- have us sign the paper.

. . .

Q Third page. Okay. Thank you very much. I appreciate your patience. Is that third page your signature?

A Yes, it is my signature.

Q And does it state here at the top, "I believe I'm the original, first, and sole inventor (if only one name is listed below) or an original, first, and sole inventor (if plural names listed below) of the subject which is claimed and for which a patent is sought on the invention entitled " ?

Do you see the language at the top, sir ?

A Which part ? I do not follow.

Q At the very top of the page, about three lines down.

A Three lines – "I believe I am the original, first, and sole inventor" Yeah, I see that.

Q And at the bottom of the page just above your signature, sir, it states, does it not, "I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information believed"

A Yeah, I see it.

Q And when was this signed, sir ?

A On here it say in April 6, 1994.

. . .

Q When you went to work for Texas Instruments, did you give them a resume ?

A Yes, I did.

Q And did you list your employment at ADS ?

A Yes, I did.

Q Did you list any of your work on helping ADS to obtain patents while you were there , sir ?

A Yes, I did.

Q Now – and they gave you a good job there, is that correct, sir ?

A Yeah. It's good for me.

. . .

Q Now, how does – were you involved in helping Dr. Wu determine the driving waveform for the ADS patent ?

A Yeah. We discuss a lot about this, almost at that time – at that time almost every day.

Q When was that, sir ?

A We thought a lot of different waves, tying to lower the driving voltage and speed up the driving.

Q What did you ultimately – what was your ultimate determination as the best way to do it, sir ?

A You mean what kind of waveforms we use ?

Q Yes. What did you finally decide on ?

A Well, we never decide which one is best since we cannot find – we know some waveforms are very good, but we did not find the driver since the driver – that waveform requires very high voltage. We cannot find the part, find the circuit parts.

. . .

Q Do you see the words there [West Patent, Col. 4, l.36]: "The addressing means can be of any type known in the art, such as an active matrix, a multiplexing circuit, electrodes, and lasers" ?

A I cannot find the statements you are saying. Can you show me ?

Q Let's just put it up on the screen, sir. Can you see the TV screen, sir ?

A It's hard to read.

Q I'll zoom in on it a little bit.

A It's not clear here.

Q Do you see that language, sir ?

A Yeah, I see that. "The addressing means can be of any type known in the art..."

Q Such as ?

A "Such as an active matrix, multiplexing circuit, electrodes and laser."

Q It doesn't say there, does it, sir, that the addressing means has to have a particular type of circuitry, does it ?

A No.

Q Okay.

A My understanding. My understanding may not be right.

Q And in the ADS patent, it doesn't refer to any special kind of circuitry, does it?

A No. Only there –mark 16—sorry. It's only driving waveforms, not circuitry.

...

Q . . . Now, it's your testimony, sir, is it, that this [photograph] related to a Kent Display device ?

A Yeah, this picture was taken from demo units

brought by Zvi Yaniv.

Q And you don't know that demo unit was a polymer-free or a polymer-stable ?

A You cannot know that since the chemical mixture is between – sealed inside the glass.

. . .

Q Can you tell by looking at the cell whether it has a special type of cholesteric liquid crystal mixture in it ?

A You cannot tell.

. . .

Q Could you tell by looking at the cell whether or not it would have positive dielectric anisotropy? Just by looking at it.

A Would you say it again ? Sorry.

Q Whether it would have positive dielectric anisotropy.

A You cannot tell that.

Q You cannot tell ?

A No.

Q Now, let's turn to the actual picture on the screen. Looking at the picture, sir, can you tell

me, looking at that picture, what the addressing means is on the West Patent ?

A What do you mean the addressing means ? You mean the driver ?

Q No, the specific type of waveform or type of pulse that is–

A No. You cannot tell that. The driving waveform is a soft program. It's in the ROM—EPROM. See the center part, the chip in the center with the window ?

Q Yes.

A Can you see there's a ROM window ?

Q Could you –

A That's a EPROM. See the small window in the center of the screen ?

Q The little one ?

A Yeah, the big chip with a window in the center.

Q Okay.

A That is EPROM.

Q That's a ROM ?

A Yeah, that's a ROM.

Q That's what we sometimes call read-only memory?

A Yeah, it's read-only memory.

Q And that is something that has some special programming built into it ?

A Yes. You can program that.

Q You can't tell by just looking at that what that programming is ?

A No, you can never tell that.

Q Nor can you tell by taking a picture of it what the programming is, can you, sir ?

A No.

. . .

Q [Showing witness a device] Never seen that before ?

A No.

Q Are you familiar with products that ADS is presently marketing ?

A No. I have not contacted them for a long time, so I don't know.

Q How long is a long time, sir ?

A Since I – I think at least a year I did not see them.

Q And you haven't been involved in the development of product for Nokia, have you, sir?

A I know before I left they were talking about that, but at that time we were talking about using STN driver to drive this display.

MR. NASH What was the last exhibit ?

THE COURT: 336 was the last exhibit.

MR. NASH Could I mark this as 336 ?

THE COURT: The device that you just gave to the witness ? You may have it marked as 336.

BY MR. NASH:

Q Looking at that sir, do you see that has some circuitry on the back ?

A Which one ?

Q The device you are holding.

A This one ?

Q Yes.

A Yes. I see it. It's over here.

. . .

Q Okay. Now, looking at this device your holding, can you identify any of those – either of those parts on that.

A No, no.

. . . Q I'm going to put it side by side with the picture. It's your testimony, isn't it sir, that neither of the parts you identified in the picture are located anywhere on the exhibit we've just been looking at ?

A No, there's no identical parts, but I think–no identical parts.

Q No identical parts ?

A Right.

Q It's a different type of circuitry isn't it, sir ?

A Yeah, but I think the principle may be the same. There's a power supply with the big square on the driving circuit on the top.

Q Most drivers have a power supply, don't they, sir ?

A Here this one, yeah, it got a power supply also. But there's three parts on the top right below the coils, those three coils.

Q The question is: Those parts that you identified earlier, they are not on the left-hand cell, are they?

A Huh ?

Q Those parts are not on the left-hand cell ?

A No, no, but the same - - they are the power supplies. You can use a different power supplies.

Q By the way, sir, the one on the right, that's the actual size, is that correct, mor or less ?

A I don't know exactly, but in my memory it's about that size.

Q And of course, the one on the left is the actual size, because that the actual -

A Yeah, that's the actual thing.

Q Is the driver on the right-hand side sometimes called a Supertech driver ?

A Yes.

Q Are you aware that ADS was looking for a driver that could perform two different functions, one that was high-voltage and another that was low crosstalk ?

A Yeah. We - - before I left there, we were talking a lot about that, and we tried - - I suggested to

them to use the STN driver. I think they did. But for this one, I don't know when they changed to this driver.

. . .

Q Now, isn't it true, sir, that the Supertech driver in fact could not accomplish the combination of those two requirements, could it ?

A Yes, it is. Yes, they - -

Q Is it your testimony that they could ?

A Right, yeah, it could.

Q Isn't it true, sir, that it could only do a high voltage but not accomplish a low crosstalk ?

A Let me see. I forgot, I think. Maybe not.

Q Maybe not ?

A Maybe not, yeah. Maybe not.

Q And ADS uses in its products high voltage and low crosstalk, doesn't it, sir ?

A You mean this actual one, the small one ?

Q Yes.

A I don't know. I don't know what it is in here, but before this, I think they use the STN driver,

yes.

. . .

Q How did it come about that Mr. Tucker got in touch with you in this case ?

A You mean what did he talk to me ?

Q Yes.

A About the photograph.

Q He called you, sir ?

A Huh ?

Q He called you ?

A Yeah, he called me.

. . .

Q How many times have you spoken to him or anybody representing Kent Display Systems since that time ?

A Three or four times. I don't remember.